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NITROGEN

PHOSPHATE

POTASH

**THE FERTILIZER SUPPLY
1973-74**



JULY 1974

**UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Stabilization and Conservation Service
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THE FERTILIZER SUPPLY 1973-74 1/

SUMMARY

Net domestic supplies of fertilizer materials in 1973-74 are expected to total 20.6 million tons of plant nutrients - nitrogen (N), phosphate (P_2O_5), and potash (K_2O). This is 8 percent more than last year's supply and also 8 percent more than 2 years ago.

Estimated supplies of N will total 9,676,000 tons, up 8 percent from last year and 10 percent from 2 years ago; P_2O_5 , 5,301,000 tons, virtually the same as the past 2 years; and K_2O , 5,620,000 tons, up 15 percent from a year ago and 16 percent from 2 years ago.

Existing anhydrous ammonia plants are expected to continue operating at near rated capacities. Natural gas curtailments have been less than expected earlier largely as a result of reduced pressure on gas supplies because of the mild winter, and prompt action by the Federal Power Commission in restoring the gas curtailments that did occur. Production of other nitrogenous materials is expected to continue at levels above last year.

Wet-process phosphoric acid supply is expected to be about 2 percent larger than last year. Ammonium phosphate production will be down about 5 percent, while concentrated superphosphate will be up 4 percent, and all other phosphates will be up about 18 percent.

About 74 percent of the net domestic supply of potassium chloride is expected to be imported, primarily from Canada. The supply from domestic production is expected to be down about 4 percent. Potassium sulfate supplies are expected to be up 18 percent from year-ago levels.

Nitrogen and phosphates are in the tightest supply position since the early 1950's. Available supplies are not sufficient to provide all farmers with the quantities they need. The supply availability has been uncertain, and the strong competition to obtain those supplies that were available has tended to distort the magnitude of the shortage.

While some phosphate plants had fuel supply problems, these were resolved with minimum loss in production. Total imports of N, P_2O_5 , and K_2O are expected to be up 22 percent over last year. N and K_2O imports will be up 14 and 28 percent, respectively, while P_2O_5 imports will be down 18 percent from a year ago.

Exports of N, P_2O_5 , and K_2O are expected to be 6 percent higher than last year. N exports will be down about 2 percent and P_2O_5 and K_2O exports will be about 10 percent greater than a year ago.

1/ The fertilizer year is from July 1 through June 30.

NITROGEN (N)

Net domestic supplies of nitrogen (N) for fertilizer use in 1973-74 are expected to total 9,676,000 tons, about 8 percent more than was available last year and 10 percent more than 2 years ago (table 1). Supplies from domestic production will be up about 6 percent over last year. Imports will be up about 14 percent, while exports will be down about 2 percent.

Supply from domestic production - Supplies of nitrogen (N) from domestic production are expected to total 10,002,000 tons (table 1). Anhydrous ammonia shipped as such for fertilizer use will be up about 10 percent over last year. Production of all other liquid nitrogen indicates an increase of about 11 percent. Liquid nitrogen will be about 64 percent of the total domestic supply of N.

Solid ammonium nitrate supplies will be down 1 percent from last year. Ammonium sulfate will be up 17 percent. Solid urea for fertilizer use will be up about 4 percent. Other solid nitrogen bearing materials will be down about 12 percent from last year.

Imports - Nitrogen imports will total about 1,007,000 tons of N, 14 percent more than in 1972-73. Imports of calcium nitrate will more than double. Ammonium-nitrate limestone will be near 150,000 tons. Nitrogen solutions will be up 56 percent. Anhydrous ammonia imports will be up about 13 percent over last year. Urea imports will be down about 2 percent.

Exports - Nitrogen exports will total around 1,333,000 tons, about 2 percent less than last year. Urea and anhydrous ammonia exports are expected to be down from last year, while all other materials are expected to be up.

Nitrogen capacities - Domestic anhydrous ammonia capacity is estimated to have been 16.8 million tons of anhydrous ammonia (NH₃) on January 1, 1974, down slightly from 16.9 in 1973. About 565,000 tons of capacity is scheduled to start production during 1974 and 1,224,000 tons during 1975. If achieved, this will add 3 percent in 1974, and 7 percent in 1975 to January 1, 1974 anhydrous ammonia capacity.

Urea capacity is estimated to have been 4.2 million tons of material. About 730,000 tons of additional capacity is scheduled to start production during 1974 with 610,000 tons more during 1975. Ammonium nitrate capacity for production of fertilizer is estimated to be 6.4 million tons of material, about 59 percent solid and 41 percent liquid. In addition, about 1.3 million tons of capacity is available for industrial use. Expansion of fertilizer ammonium nitrate capacity is expected to total 420,000 tons of material by the end of calendar year 1975.

Table 1.--Nitrogen: Estimated supply of N for fertilizer purposes,
United States, fertilizer years, 1971-72, 1972-73, and 1973-74

Item	1971-72 <u>1/</u>	1972-73 <u>1/</u>	1973-74	Percent change in 1973-74 from	
				1972-73	1971-72
	1,000 <u>Short tons</u>	1,000 <u>Short tons</u>	1,000 <u>Short tons</u>	<u>Percent</u>	<u>Percent</u>
Supply from domestic production:					
Liquids:					
Ammonia (including aqua)	3,830	3,835	4,217	+ 10	+ 10
All other	1,787	1,966	2,183	+ 11	+ 22
Total liquids	5,617	5,801	6,400	+ 10	+ 14
Solids:					
Ammonium nitrate <u>2/</u> <u>3/</u>	1,286	1,360	1,351	- 1	+ 5
Ammonium sulfate <u>3/</u>	497	500	586	+ 17	+ 18
Urea	549	576	601	+ 4	+ 9
All other solids <u>4/</u>	1,022	1,213	1,064	- 12	+ 4
Total solids	3,354	3,649	3,602	- 1	+ 7
Total liquids and solids	8,971	9,450	10,002	+ 6	+ 11
Imports:					
Ammonia (including aqua)	323	282	318	+ 13	- 2
Nitrogen solutions	36	43	67	+ 56	+ 86
Ammonium nitrate	131	110	106	- 4	- 19
Ammonium sulfate	55	58	63	+ 9	+ 15
Urea <u>3/</u>	131	241	236	- 2	+ 80
Sodium nitrate	26	12	10	- 17	- 62
All other	141	135	207	+ 53	+ 47
Total	843	881	1,007	+ 14	+ 19
Exports:					
Ammonia (including aqua)	346	570	530	- 7	+ 53
Ammonium nitrate	11	7	14	+100	+ 27
Ammonium sulfate	117	102	128	+ 25	+ 9
Urea	214	241	171	- 29	- 20
All other	344	438	490	+ 12	+ 42
Total	1,032	1,358	1,333	- 2	+ 29
Net domestic supply	8,782	8,973	9,676	+ 8	+ 10

1/ Revised.

2/ Includes ammonium nitrate and ammonium nitrate-limestone mixtures.

3/ Adjusted for estimated quantity going into non-fertilizer uses.

4/ To avoid duplication, the figure for "all other solids" has been adjusted by the estimated amount of imported ammonia used in primary materials.

PHOSPHATE (P₂O₅)

Net domestic supplies of phosphate (P₂O₅) will total 5,301,000 tons, about the same as each of the last 2 years (table 2). Imports will be down 18 percent from 1972-73 and down 21 percent from 1971-72. Exports are expected to be up 10 percent from a year ago and up 42 percent over 1971-72.

Normal superphosphate - Total supplies of normal and enriched superphosphate from domestic production will be 666,000 tons of P₂O₅, about 7 percent more than last year (table 2). Imports will be negligible. Exports are expected to total about 8,000 tons of P₂O₅, compared with 9,000 tons last year.

Concentrated superphosphate - Supplies of concentrated superphosphate from domestic production are expected to total 1,732,000 tons of P₂O₅, 4 percent more than last year. Imports will be about half those of last year. Exports are expected to be up about 2 percent.

Ammonium phosphate - Domestic supplies of ammonium phosphate are expected to total 2,563,000 tons, 5 percent less than in 1972-73, but 5 percent more than 2 years ago. Imports will be down about a fourth from last year. Exports will be up about 8 percent.

World market for P₂O₅ - Strong demand and attractive prices for P₂O₅ on the world market have continued the pressure on domestic producers to take advantage of the more attractive export prices. However, domestic fertilizer prices were decontrolled in October 1973 and domestic prices have increased. World prices increased further and continue to be higher than domestic prices. Even though domestic producers scheduled fertilizer materials for export prior to price decontrol, they voluntarily diverted some materials scheduled for export to the domestic market.

Phosphoric acid - Domestic supplies of phosphoric acid available to secondary fertilizer manufacturers are expected to be slightly less than last year. Secondary manufacturers of fertilizer purchase acid to produce solid mixtures, solid N-P base materials, liquid N-P base materials, liquid mixed fertilizers, and for direct application.

Imports are expected to be down 8 percent, while exports will be up 20 percent.

Trends in direct application of ammonium phosphate - Direct application of selected ammonium phosphate grades totaled 3,636,511 tons of material in 1972-73, up 17 percent over 1971-72 and 32 percent over 1968-69 (table 3). Nitrogen in these grades increased 30 percent and P₂O₅ increased 39 percent over the last 5 years.

Table 2.--Phosphate: Estimated supply of P₂O₅ for fertilizer purposes,
United States, fertilizer years, 1971-72, 1972-73, and 1973-74

Item	1971-72 <u>1/</u>	1972-73 <u>1/</u>	1973-74	Percent change in 1973-74 from	
				1972-73	1971-72
	1,000 Short tons	1,000 Short tons	1,000 Short tons	Percent	Percent
Supply from domestic production:					
Normal and enriched superphosphate	678	620	666	+ 7	- 2
Concentrated superphosphate	1,667	1,666	1,732	+ 4	+ 4
Ammonium phosphate <u>2/</u>	2,430	2,704	2,563	- 5	+ 5
All other <u>3/</u>	1,375	1,397	1,643	+ 18	+ 19
Total	6,150	6,387	6,604	+ 3	+ 7
Imports:					
Concentrated superphosphate	23	27	12	- 56	- 48
Ammonium phosphate	210	187	142	- 24	- 32
All other	93	98	103	+ 5	+ 11
Total	326	312	257	- 18	- 21
Exports:					
Normal superphosphate	3	9	8	- 11	+167
Concentrated superphosphate	333	396	404	+ 2	+ 21
Ammonium phosphate	689	925	999	+ 8	+ 45
All other	77	94	149	+ 59	+ 94
Total	1,102	1,424	1,560	+ 10	+ 42
Net domestic supply	5,374	5,275	5,301	0	- 1

1/ Revised.

2/ Liquid and solid ammonium phosphates, excluding those combined with potash salts in the process of manufacture.

3/ Includes nitric phosphates, sodium phosphate, wet base goods, natural organics, phosphate rock, colloidal phosphate, basic slag, estimates of wet-process and furnace phosphoric acid for liquid and solid mixed fertilizers, and direct application, and ammonium phosphates combined with potash salts in the process of manufacture.

Table 3.--Ammonium phosphates: Consumption of selected grades for direct application, United States, fertilizer years, 1968-69 through 1972-73

Grade	1968-69	1969-70	1970-71	1971-72	1972-73
	<u>Short tons</u>	<u>Short tons</u>	<u>Short tons</u>	<u>Short tons</u>	<u>Short tons</u>
10-34-0	189,341	234,093	299,745	360,948	366,971
11-37-0	44,925	51,405	47,186	64,460	81,889
11-48-0	155,620	130,598	139,138	133,750	147,188
11-55-0	33,497	42,671	45,792	63,381	70,507
13-39-0	30,343	25,222	22,728	20,344	41,764
13-52-0	60,898	55,327	68,214	58,069	42,565
16-20-0	516,514	428,171	384,705	404,353	471,397
16-48-0	79,580	60,174	51,364	41,399	44,309
18-46-0	1,491,388	1,514,911	1,716,365	1,875,690	2,282,013
21-53-0	22,211	34,959	42,862	31,028	30,709
23-23-0	25,310	17,955		8,742	12,617
27-14-0	21,265	16,004	12,075	11,015	15,691
28-14-0	20,704	19,580	22,274	17,432	12,474
29-14-0	18,571				
30-10-0	37,500	31,016	16,992	19,035	16,417
Total	2,747,667	2,662,086	2,869,440	3,109,646	3,636,511
N content $\frac{2}{2}$	459,026	439,994	469,643	506,100	595,895
P ₂ O ₅ content $\frac{2}{2}$	1,074,978	1,065,494	1,176,028	1,271,663	1,492,956

1/ Excludes Alaska, Hawaii, and Puerto Rico.

2/ N and P₂O₅ contents calculated.

Source: Consumption of Commercial Fertilizers and Primary Plant Nutrients in the United States Statistical Reporting Service, U.S. Department of Agriculture.

Use of 18-46-0 accounted for 63 percent of the total tonnage of selected ammonium phosphate grades, 69 percent of the nitrogen, and 70 percent of the P_2O_5 in 1972-73.

Use of 10-34-0 and 11-37-0 increased 6 percent over the previous year. These materials are liquid ammonium polyphosphates and are gaining in popularity.

The term "ammonium phosphate," as used in this report, includes a group of N-P materials - monoammonium phosphate and diammonium phosphate, mixtures of the two, or combinations with ammonium nitrate or ammonium sulfate plus ammonium polyphosphate.

Table 3 does not include all grades of ammonium phosphate. It does include some tonnage of N-P grades which are produced by mixing N and P_2O_5 source materials other than anhydrous ammonia and phosphoric acid, or by other chemical processes. The 16-20-0 is an example of a material which is not necessarily an ammonium phosphate.

Phosphate capacities - Normal superphosphate capacity in operating plants is estimated to be about 900,000 tons of P_2O_5 , 18 percent less than last year. Concentrated superphosphate capacity is estimated to be 2.1 million tons of P_2O_5 , unchanged from last year.

Ammonium phosphate capacity in plants operated by primary producers is estimated to be about 3.7 million tons of P_2O_5 , up from 3.2 million tons last year. There are other plants operated by secondary producers which manufacture ammonium phosphate primarily for their own use in mixed fertilizers, liquid ammonium phosphate, and liquid ammonium polyphosphate for use in liquid mixed fertilizer and for direct application. Sufficient information is not available for a reliable capacity estimate for these.

Wet-process phosphoric acid capacity in operating plants is estimated to be 6.6 million tons of P_2O_5 compared with 6.3 million tons a year ago. The 300,000-ton increase over last year is the result of expansion or technological improvements within existing plants.

The above estimates of P_2O_5 capacities are based on current production of phosphatic materials. However, these capacities may shift within limits from one material to another, since phosphoric acid is the basic P_2O_5 source for the production of all concentrated phosphatic materials except nitric phosphate. Within limits, market conditions govern the division of the output into concentrated superphosphate, various grades of ammonium phosphate, liquid base N-P materials, or sales of phosphoric acid to secondary fertilizer manufacturers.

POTASH (K₂O)

Net domestic supplies of potash (K₂O) in 1973-74 are expected to total 5,620,000 tons, 15 percent more than last year and 16 percent more than 2 years ago (table 4). Imports are expected to be up 28 percent over 1972-73. Exports are expected to be up 12 percent.

Potassium chloride - Supplies of domestically produced potassium chloride (muriate of potash) are expected to total 2,240,000 tons of K₂O (table 4), about 4 percent less than last year and 6 percent more than 2 years ago. Imports are expected to be up about 27 percent. Exports will be up 11 percent. Subtracting exports from domestic production means that only 26 percent of the net domestic supply will be from domestic production. Practically all of the remaining 74 percent will be imported from Canada.

Potassium sulfate - Supplies of potassium sulfate and potassium magnesium sulfate from domestic production are expected to total 382,000 tons of K₂O, about 18 percent more than last year and 32 percent more than 2 years ago. Imports are expected to be up about 63 percent and exports up about 18 percent.

Potash capacities - U.S. potash production capacity is estimated to be 3.2 million tons of K₂O as of January 1, 1974, according to the latest estimates from the Bureau of Mines.

Canadian capacity is estimated to be about 8.3 million tons of K₂O.

INVENTORIES

Inventories of nitrogen and phosphate materials are reported monthly by the Bureau of the Census. Inventories of each nitrogenous material are stocks held by producing companies at plants and other locations. Phosphate material inventories are the stocks at producing locations only. Monthly potash inventories are not available from Government sources. Data are not available on inventories held by secondary manufacturers, distributors, and dealers.

Nitrogen - The inventory of anhydrous ammonia at the end of June 1973 was 622,318 tons, about 37 percent less than the previous June (table 5.) The inventory in December 1973, the middle of the current fertilizer year, was about half the December 1972 level. Stocks of other nitrogenous materials at the end of June 1973 were also at low levels. Thus, virtually all of the supplies available for distribution during the 1973-74 fertilizer year were those provided from current production during the period.

Table 4.--Potash: Estimated supply of K₂O for fertilizer purposes,
United States, fertilizer years, 1971-72, 1972-73, and 1973-74

Item	1971-72 <u>1/</u>	1972-73 <u>1/</u>	1973-74	Percent change in 1973-74 from	
				1972-73	1971-72
	1,000 <u>Short tons</u>	1,000 <u>Short tons</u>	1,000 <u>Short tons</u>	<u>Percent</u>	<u>Percent</u>
Supply from domestic production:					
Potassium chloride	2,107	2,322	2,240	- 4	+ 6
Potassium sulfate <u>2/</u>	290	323	382	+ 18	+ 32
All other	35	35	35	0	0
Total	2,432	2,680	2,657	- 1	+ 9
Imports:					
Potassium chloride	3,026	3,051	3,875	+ 27	+ 28
Potassium sulfate <u>2/</u>	24	27	44	+ 63	+ 83
All other	38	39	77	+ 97	+103
Total	3,088	3,117	3,996	+ 28	+ 29
Exports:					
Potassium chloride	524	761	845	+ 11	+ 61
Potassium sulfate <u>2/</u>	106	120	142	+ 18	+ 34
All other	27	41	46	+ 12	+ 70
Total	657	922	1,033	+ 12	+ 57
Net domestic supply	4,863	4,875	5,620	+ 15	+ 16

1/ Revised.

2/ Includes potassium-magnesium sulfate.

Table 5.--Inventories of selected fertilizer materials, United States, end of June, December, and February 1/

Material	Unit	Beginning inventory for following fertilizer year			Mid-fertilizer year inventory			Inventory build-up for spring season		
		June			December			February		
		1971	1972	1973	1971	1972	1973	1972	1973	1974
Anhydrous ammonia	Tons of material	641,983	990,319	622,318	1,663,454	1,593,753	857,284	1,967,310	1,689,034	1,116,823
Ammonium nitrate, solid	"	94,667	158,696	27,824	441,051	321,018	159,749	439,931	271,707	149,087
Ammonium sulfate	"	86,547	81,872	62,508	149,334	178,087	108,565	161,895	216,980	200,754
Ammonium sulfate coke oven	"	30,000	22,000	39,000	28,000	83,000	30,000	30,000	91,000	26,000
Nitrogen solutions	Tons of N	220,759	219,107	97,330	448,838	328,899	309,483	516,867	403,058	244,250
Phosphoric acid wet-process	Tons of P ₂ O ₅	86,426	87,231	79,435	81,787	110,518	87,121	81,262	83,018	112,561
Total phosphates	"	335,614	323,727	297,553	388,676	432,868	325,360	338,360	437,426	298,291
Normal & enriched superphosphates	"	65,013	67,916	52,625	92,686	71,518	66,846	97,401	74,782	66,410
Concentrated superphosphates	"	109,920	97,582	103,960	104,484	113,194	108,290	94,399	117,014	111,278
Ammonium phosphates	"	124,518	133,190	129,919	153,147	196,584	129,901	119,098	212,522	106,243
Other phosphates	"	36,224	25,039	11,049	38,359	51,572	20,323	27,462	33,108	14,360

1/ Current Industrial Reports, Inorganic Fertilizer Materials and Related Acids, M28B, Bureau of the Census.

Phosphate - The wet-process phosphoric acid inventory remains fairly steady because it is used to manufacture other phosphatic materials (table 5).

Total stocks of phosphates at the end of June 1973 were 39 percent less than the average June inventories for the 5-year period prior to 1970-71.

FOREIGN TRADE IN FERTILIZER

U.S. imports - Eighty-two percent of total fertilizer imports came from Canada last year (table 6). Three-fourths of this was potassium chloride. Calcium nitrate, anhydrous ammonia, potassium sulfate, potassium-sodium nitrate, and sodium nitrate are imported fertilizers for which Canada is not the major source. Mexico continues to be the major import source of phosphoric acid.

Ammonium sulfate, calcium nitrate, urea, nitrogen solutions, potassium chloride, potassium sulfate, calcium cyanamide, and mixed fertilizer imports showed gains in 1972-73 over the previous year (table 7). Imports of potassium chloride increased 65 percent during the last 5 years.

U.S. exports - Phosphate rock exports were twice as large as all other fertilizer exports combined (table 8). Canada and Japan again took over 2 million tons each. These two, with eight other countries, took 84 percent of the phosphate rock exported.

Potassium chloride exports were over 1 million tons and ammonium phosphate over 2 million tons. Over a half million tons each of anhydrous ammonia, urea, and concentrated superphosphate were exported.

Ammonium nitrate, ammonium sulfate, and synthetic nitrogenous materials not elsewhere classified were the only materials exported which did not show gains in 1972-73 over the previous year (table 9). Exports of ammonium phosphate increased each successive year since 1968-69.

Over half of the exported ammonium sulfate, urea, normal superphosphate, concentrated superphosphate, and ammonium phosphate went to developing countries in which the Agency for International Development (AID) had active agricultural programs (table 8). AID financed fertilizer exports to only six of these countries. However, AID did not necessarily finance all the fertilizer exported to these countries.

U.S. historical trade balance - The United States shifted from a net importer of nitrogen (N) to a net exporter in 1966 (table 10). The shift resulted primarily from the increased emphasis on the use of

Table 6.--U.S. imports of selected fertilizer materials by country of origin, fertilizer year 1972-73 1/

Country of origin	-----Short tons of material-----									
	Ammonium sulfate	Ammonium nitrate	Anhydrous ammonia	Urea	Calcium nitrate	Phosphate crude	Potassium chloride	Potassium sulfate	Potassium sodium nitrate	Mixed fertilizers
Canada	242,035	329,243	74,073	196,851		238	5,060,363		98	171,112
Mexico						2,360				
Trinidad	19,767		182,891	46,879		40,514				
Netherlands Antilles			78,678							
Chile							3,905		23,346	
Brazil							11,629			21
Sweden					1,493					
Norway				84,375	96,209				6,469	26,961
United Kingdom				271						
Netherlands	14,381		7,445	329,658			7,398			
Belgium				5,589						
France							3,000	22,353		
West Germany							32,103			
Austria				4,887						
Switzerland										46
Spain							17,968			
Gibraltar							501			
Israel							120,177		7,870	
Gaza Strip							101			
Thailand										18
Japan				3,202						33
Australia				2						120
Congo							20,022			
Zaire							5,274			
Total	276,183	329,243	343,087	671,714	97,702	43,112	5,250,338	54,456	37,783	198,311

1/ Other materials imported were the following: 1,163 tons dried blood; 3,821 tons calcium cyanamide; 74,558 tons sodium nitrate; 9,190 tons bone ash, dust, meal; 12,302 tons potassium nitrate; 181 tons ammonium nitrate-limestone; 144,762 tons nitrogen solution; 20,744 tons nitrogenous fertilizer NSPF; 89,490 tons liquid phosphatic fertilizer; 78,337 tons solid phosphatic fertilizer NSPF; 8,794 tons potassic fertilizer, NSPF; 433,737 tons ammonium phosphates; and 35,057 tons fertilizer materials NSPF.

Table 7.--U.S. imports of selected fertilizer materials, fertilizer years 1968-69 through 1972-73

Material	Short tons of material			
	1968-69	1969-70	1970-71	1971-72
Anhydrous ammonia	425,103	477,189	501,451	392,975
Ammonium nitrate	234,528	306,010	365,943	390,324
Ammonium sulfate	134,979	179,350	218,752	263,559
Sodium nitrate	159,875	164,130	188,207	159,500
Calcium nitrate	50,884	48,747	48,293	39,314
Urea	251,057	423,577	329,640	365,218
Calcium cyanamide	15,152	10,862	8,357	3,356
Nitrogen solutions	80,841	97,651	194,494	119,540
Synthetic nitrogenous material	15,818	13,112	12,661	35,438
Phosphate, crude	114,019	153,626	123,194	67,058
Ammonium phosphate	277,072	395,476	471,779	488,865
Potassium chloride	3,175,006	4,377,755	4,115,291	5,082,283
Potassium sulfate	40,134	69,717	62,732	48,042
Potassium-sodium nitrate	32,821	39,094	74,913	39,586
Mixed fertilizers	161,080	168,668	198,307	188,473
				343,087
				329,243
				276,183
				74,558
				97,702
				671,714
				3,821
				144,762
				20,744
				43,112
				433,737
				5,250,338
				54,456
				37,783
				198,311

Table 8.--U.S. exports of selected fertilizer materials by country of destination, fertilizer year 1972-73 1/

Country of destination	Ammonium sulfate	Anhydrous ammonia	Ammonium nitrate	Urea	Phosphate rock (all)	Normal super-phosphate	Concentrated super-phosphate	Potassium chloride	Ammonium phosphate	Mixed fertilizers
Canada	32,890	7,395	3,242	7,554	3,226,245	3,551	46,382	59,373	73,255	63,698
Mexico	97,023	168,460	12,070	75	871,760	55	5,600	71,979	545	259
El Salvador 2/	52,105	14		6,525	16,328			7,769	39,711	11,667
Nicaragua 2/	18,050	9	40		16			1,102	12,808	576
Costa Rica 2/		22,325			6,449		16	47,301	24,547	22
Jamaica 2/	19,251		162					11,664	4,178	37
Dominican Republic 2/	67,463	104	91	29,487				12,088	23,162	3,411
Trinidad		28,217		13		193		12,468	23,162	3,411
North America, other 4/	2,664	9,504	702	1,040	56	5,730		3,963	2,806	9
Colombia 2/		19,381		6,892	54,163	44		56,551	64,192	18,402
Venezuela		1,706	1,389	13,252	941			9,515		98
Ecuador 2/	3,367			4,948	4,948	3,307		12,218	16,291	138
Chile			2,204	67,109	25,830			6,250	120,290	2,963
Brazil 2/	164,161	25,436		4,345	770,705	29,559		387,709	340,055	2,963
Uruguay 2/				9,728	33,650			3,085	2,740	415
Argentina				1,112	55	1,485		6,910	42,469	594
South America, other 4/	10		1,166		17,606	(2,684)		3,967	10,634	13,492
Norway					108,149			28,859		
Sweden					54,433				19,104	
Finland		17,134								
Denmark		62,667								
United Kingdom		144,193	12	22	87,418				8,737	11,044
Netherlands		37,118			703,089			16	19,420	36
Belgium					688,112				13,550	44,498
France		37,485		9,025	543,819			23,821	87,918	5,477
West Germany	206				1,374,626					3,897
Austria					132,745					
Switzerland					25,184					
Poland										
Spain		35,212			250,420					
Portugal		11,774								7,876
Italy	5,871	6,132		17,910	537,635		19,785	238,322	99,911	21,772
Yugoslavia					77,464	104		99,911	11,965	517
Greece		2,729								
Romania					283,920					
Turkey 2/		31,902						3,306	69,592	8
Europe, other					17,920			2,205		3
Lebanon					364,000				360,057	
Iran					343,805				198,527	
India 2/ 3/	10,582				2,800					
Pakistan 2/ 3/		2,753								
Bangladesh 2/ 3/	10,043			93,025	3,319		56,212	10,635	5,432	
Thailand 2/ 3/				373	2,213			14,028	125,075	
South Vietnam 2/ 3/	1,983			146,981					17,198	121
Singapore			13	101,239						
Indonesia 2/ 3/		16					55,052	27,126		222
Philippines 2/				9	161,810					
Korea, Republic of 2/					599,987					
China, Taiwan					84,120					
Japan			38		2,117,089		11,672	58,156	38,282	241
Asia, other	48								90	(185)
Australia				819	400					
New Zealand	102		246	1,093				85,022	19,147	7
Oceania, other			5					176,772	19,756	126
Algeria		8,351						215	(13)	89
Ethiopia 2/									9,889	
Afars and Issas									10,958	
Africa, other 4/	131	13,840	45					29	11,570	(171)
Total	485,950	693,857	21,425	522,976	13,593,248	46,712	860,304	1,247,457	2,069,078	372,692
Countries with AID programs 2/	349,364	108,308	2,728	361,006	2,017,827	41,324	571,441	588,807	1,148,612	174,793
Percent to AID countries	72	16	13	69	15	88	66	47	56	47
Countries where AID financed at least part of fertilizers 3/	22,608	2,753		240,579	352,137		111,264	14,028	599,179	130,507

1/ Other exports: 982 tons sodium nitrate; 11,170 tons natural crude potash salts; 98,124 tons nitrogenous chemical fertilizers, nec; 6,880 tons basic slag;

2/ 211,366 tons potassium chemical fertilizers, nec; and 21,960 tons organic material.

3/ Countries with active AID agricultural programs.

4/ Countries which received AID financial fertilizer but not necessarily all that was exported to each country.

5/ Includes AID and non-AID countries.

Table 9.--U.S. exports of selected fertilizer materials, fertilizer years 1968-69 through 1972-73

Material	1968-69	1969-70	1970-71	1971-72	1972-73
-----Short tons of material-----					
Anhydrous ammonia	997,874	764,649	598,426	420,865	685,120
Ammonium nitrate	110,147	81,211	58,621	33,742	21,425
Ammonium sulfate	1,185,431	528,444	600,833	557,562	485,950
Sodium nitrate	1,416	585	2,063	982	1,233
Urea	565,068	670,841	374,152	464,462	522,976
Synthetic nitrogenous materials n. e. c.	22,971	32,482	47,528	98,124	30,381
Phosphate rock	12,386,894	10,972,968	12,757,600	13,580,470	13,593,248
Normal superphosphate	37,396	36,359	17,637	13,637	46,712
Concentrated superphosphate	1,089,075	710,461	627,064	723,901	860,304
Ammonium phosphate	970,316	986,051	1,135,089	1,541,521	2,069,078
Potassium chloride	1,057,432	902,408	772,248	858,869	1,247,457
Potassium sulfate	232,511	186,138	238,047	211,366	240,306
Mixed fertilizers	268,912	403,981	317,338	243,022	372,692

Table 10.--U.S. imports and exports of primary plant nutrients, 1951-52 through 1973-74

Fertilizer Year	N		P ₂ O ₅		K ₂ O	
	Imports	Exports	Imports	Exports	Imports	Exports
1951-52	290	73	39	94	264	63
1952-53	429	44	41	74	159	54
1953-54	421	62	62	88	121	54
1954-55	373	141	61	154	139	91
1955-56	330	255	56	153	170	180
1956-57	294	268	54	256	179	315
1957-58	305	227	59	246	213	252
1958-59	294	223	64	204	238	310
1959-60	298	188	82	177	282	418
1960-61	276	213	67	238	285	484
1961-62	337	234	87	283	282	503
1962-63	344	196	117	275	486	411
1963-64	453	264	100	400	691	526
1964-65	470	392	98	432	884	625
1965-66	529	546	125	441	1,332	664
1966-67	669	749	165	787	1,643	678
1967-68	675	1,045	169	1,145	2,225	714
1968-69	690	1,594	183	995	1,944	798
1969-70	855	1,328	273	845	2,646	681
1970-71	929	1,077	283	898	2,510	620
1971-72	843	1,032	326	1,102	3,088	657
1972-73	881	1,358	312	1,424	3,117	922
1973-74*	1,007	1,333	257	1,560	3,996	1,033

* Estimated.



Import Balance



Export Balance

fertilizers in AID programs. A reduction in AID requirements in 1969-70 caused the first decline in N exports since 1962-63. The decline was reversed in 1972-73 by the worldwide food shortage and the need to increase food production.

In phosphate, the United States has maintained an export balance of processed phosphatic fertilizers since 1941. It became more pronounced as AID requirements increased. They peaked in 1967-68. A decline, which started in 1968-69, was halted in 1970-71, largely as a result of firms in several countries purchasing concentrated superphosphate and ammonium phosphate to start developing markets for plants which were under construction. The world food situation further increased the demand for P_2O_5 , and the trend in U.S. exports of P_2O_5 has continued upward.

The United States exported about 30 percent of processed fertilizer P_2O_5 in world trade in 1971-72. In addition, the United States has exported 11.0 to 13.6 million tons of phosphate rock in each of the past 5 years.

The United States had an export balance of K_2O from 1955-56 through 1961-62. Production from the newly developed Canadian deposits shifted the net balance to imports in 1962-63. Imports of Canadian potassium chloride (KCl) have been larger than deliveries of domestic KCl since 1969-70.

THE WORLD FERTILIZER MARKET

World interest in fertilizer has intensified as demonstrations have shown how the yield of crops can be increased through the use of fertilizer. Fertilizer is an important tool for increasing needed food production in the developing countries, and for use by developed countries to produce surplus food, which can be shared with developing countries as long as the need exists.

World production of primary plant nutrients totaled about 77 million metric tons ^{1/} in 1971-72, an increase of about 8 percent over the previous year (tables 11, 12, and 13). Consumption totaled over 72 million metric tons in 1971-72, a 6 percent increase over the previous year.

The United States ranked number one in total use of each of the primary plant nutrients and the production of N and P_2O_5 in 1971-72. It produced 21 percent of the world's plant nutrients and used 22 percent of them in 1971-72.

^{1/} Multiply metric tons by 1.1023 to convert to short tons.

Table 11.--Nitrogen: Production, consumption, and foreign trade by leading countries, 1971-72

Country	Production		Imports		Exports		Consumption	
	Metric tons N	Rank	Metric tons N	Rank	Metric tons N	Rank	Metric tons N	Rank
United States	8,318,000	1	766,000	2	935,000	2	7,372,338	1
U. S. S. R.	6,055,000	2	11,700 1/	-	188,700	-	5,182,000	2
Japan	2,120,900	3	-----	-	1,274,400	1	875,500	9
China	1,840,000 1/	4	1,526,000 1/	1	20,000 1/	-	3,346,000 1/	3
France	1,416,802	5	226,088	6	163,433	-	1,524,827	5
West Germany	1,320,807	6	228,347	5	369,693	7	1,131,134	6
Poland	1,080,755	7	-----	-	319,931	9	907,063	8
Netherlands	1,038,025	8	13,385	-	651,822	3	373,631	-
Italy	1,034,191	9	100,928	-	442,214	5	624,874	-
India	977,770	10	470,000	3	-----	-	1,761,000	4
United Kingdom	772,800	-	170,100	-	14,800	-	930,100	7
Spain	673,000	-	48,000	-	-----	-	667,000	10
Belgium	613,135	-	88,213	-	482,463	4	167,193	-
Canada	760,000 1/	-	27,700	-	437,900 1/	6	336,000 1/	-
Romania	826,836	-	-----	-	348,800 1/	8	431,200	-
Norway	383,400	-	600 1/	-	303,100	10	81,500	-
Egypt	120,000 1/	-	238,100 1/	4	300 1/	-	350,000	-
Denmark	75,142	-	220,817	7	-----	-	307,135	-
Indonesia	48,185	-	214,692	8	-----	-	196,336	-
Brazil	67,711	-	208,989	9	-----	-	276,700	-
Mexico	327,350	-	200,257	10	40,209	-	519,097	-
World Total	35,128,999		6,964,079		6,954,420		33,700,259	

1/ Unofficial figures.

Source: Annual Fertilizer Review 1972, Food and Agriculture Organization of The United Nations.

Table 12.--Phosphate: P₂O₅ production, consumption, and foreign trade by leading countries, 1971-72

Country	Production		Imports		Exports		Consumption	
	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank
United States	5,795,000	1	297,000	2	999,000	1	4,339,036	1
U. S. S. R.	2,772,000	2	7,500 1/	-	108,900	9	2,442,000	2
France	1,577,074	3	365,619	1	88,975	10	1,932,055	3
West Germany	942,652	4	121,184	7	144,373	7	934,907	4
China	916,000 1/	5	-----	-	-----	-	916,000 1/	5
Australia	762,000 1/	6	6,900	-	100 1/	-	775,300 1/	6
Belgium	736,399	7	61,382	-	493,222	2	149,088	-
Poland	705,588	8	29,200	-	-----	-	718,566	7
Japan	685,300	9	20,600	-	47,700	-	664,400	8
Canada	660,000 1/	10	15,000 1/	-	330,000 1/	3	340,000 1/	-
Italy	504,043	-	181,333	5	66,979	-	574,535	9
India	308,000	-	242,000	3	-----	-	565,000	10
Netherlands	294,777	-	56,884	-	255,106	4	101,273	-
Tunisia	207,200 1/	-	-----	-	193,500 1/	5	16,500 1/	-
Luxembourg	142,847	-	-----	-	145,385	6	7,476	-
Morocco	144,300 1/	-	200 1/	-	117,000 1/	8	39,000 1/	-
Brazil	230,994	-	215,941	4	-----	-	446,935	-
Bulgaria	145,800	-	128,000	6	-----	-	266,015	-
Chile	15,000 1/	-	90,000 1/	8	-----	-	103,643	-
United Kingdom	462,400	-	81,700	9	14,600	-	511,600	-
Algeria	13,000 1/	-	76,700 1/	10	-----	-	89,700 1/	-
World Total	22,502,572		3,076,205		3,365,644		21,090,163	

1/ Unofficial figures.

Source: Annual Fertilizer Review 1972, Food and Agriculture Organization of The United Nations.

Table 13.--Potash: K₂O production, consumption, and foreign trade by leading countries, 1971-72

Country	Production		Imports		Exports		Consumption	
	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank	Metric tons	Rank
U. S. S. R.	4,807,000	1	-----	-	1,611,600	3	2,804,000	2
Canada	3,904,500	2	52,100	1/	3,868,000	1/	190,500	-
West Germany	2,487,268	3	86,700	-	1,088,291	4	1,233,540	5
East Germany	2,426,000	4	-----	-	1,757,000	2	638,800	6
United States	2,206,000	5	2,802,000	1	596,000	6	3,917,609	1
France	1,827,047	6	211,964	-	721,284	5	1,503,047	3
Israel	552,050	7	-----	-	530,500	7	12,090	-
Spain	502,000	8	-----	-	179,000	8	262,000	-
Congo	274,300	9	-----	-	-----	-	2,900	1/
Italy	157,218	10	180,739	-	24,151	9	250,356	-
Poland	-----	-	1,172,938	2	-----	-	1,262,571	4
Japan	-----	-	487,100	5	-----	-	582,600	7
Czechoslovakia	-----	-	569,000	3	-----	-	569,000	8
United Kingdom	-----	-	491,900	4	-----	-	496,500	9
Brazil	-----	-	350,608	6	-----	-	350,608	10
Belgium	-----	-	306,505	7	-----	-	170,954	-
Hungary	-----	-	295,638	8	-----	-	309,176	-
India	-----	-	284,000	9	-----	-	303,000	-
Netherlands	1,415	-	229,886	10	1,430	-	126,260	-
Chile	23,400	-	31,400	1/	11,000	1/	16,697	-
World Total	19,244,824		10,114,869		10,388,256		17,480,094	

1/ Unofficial figures.

Source: Annual Fertilizer Review 1972, Food and Agriculture Organization of The United Nations.

Nitrogen (N) - In 1971-72, the United States produced 24 percent of the world's supply of N for fertilizer, consumed 22 percent, and ranked number two as an importer and exporter (table 11). China ranked number one as an importer, importing nearly twice as much as any other country. One-half of the top importers were developing countries. Japan, the Netherlands, Belgium, Canada, and Norway each exported more N than it used at home.

Phosphate (P₂O₅) - The United States continued in 1971-72 as the leading producer, consumer, and exporter of P₂O₅, excluding phosphate rock (table 12). It produced 26 percent and consumed 21 percent of the world's fertilizer P₂O₅. Five of the top 10 importers are developing countries. Belgium, the Netherlands, Tunisia, Luxembourg, and Morocco exported more P₂O₅ than was used at home.

Potash (K₂O) - The United States ranked fifth as a producer, but first as a consumer and as an importer of K₂O in 1971-72 (table 13). The U.S.S.R. ranked first as a producer and second as a consumer of potash. Canada, East Germany, and Israel, of the major producers, exported more K₂O than was used at home. Poland, Czechoslovakia, the United Kingdom, Japan, Brazil, Belgium, Hungary, India, and the Netherlands, in order, are the top 10 importers after the United States. The first 5 of these are among the top 10 users of K₂O.

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